



Indiana Department of Environmental Management

Protecting Hoosiers and Our Environment Since 1986



The Grand Calumet River Area of Concern Program: An Introduction

Last Update:
September 11, 2023



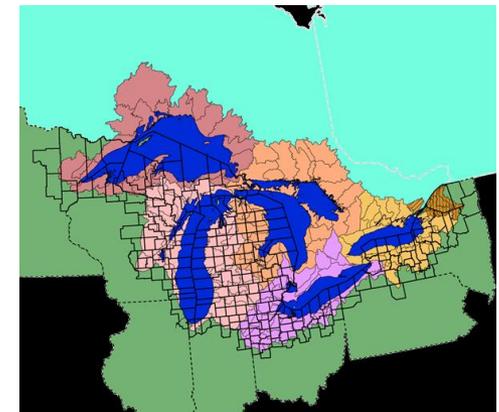
What is this “Area of Concern”?





Great Lakes Water Quality Agreement

- The agreement, signed by the United States and Canada in 1972, recognized that:
 - The Great Lakes are vital to the social and economic well-being of both countries.
 - Both countries needed to cooperate to protect this binational resource.
 - Intense use and modification by people had resulted in lakewide problems.
- In addition, some areas were particularly impacted by human-caused contamination.
 - The agreement was updated in 1987 to address these “Areas of Concern.”
 - These areas had the potential to damage the Great Lakes as a whole.

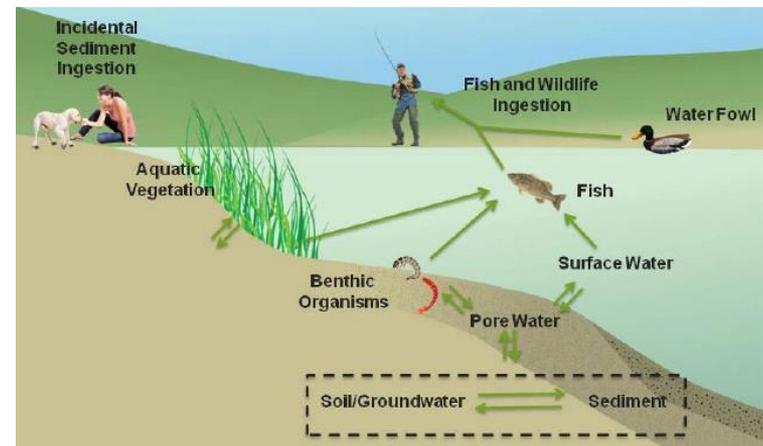


Areas of Concern Program

- The United States and Canada have identified 43 Great Lakes “Areas of Concern” (AOCs).
- Focuses on contaminated lakes, rivers, and harbors with a direct connection to the Great Lakes.
- Takes an ecosystem approach to addressing legacy (historical) contamination.
- Restoring these areas will improve the Great Lakes as a whole.



Source: Environment and Climate Change Canada

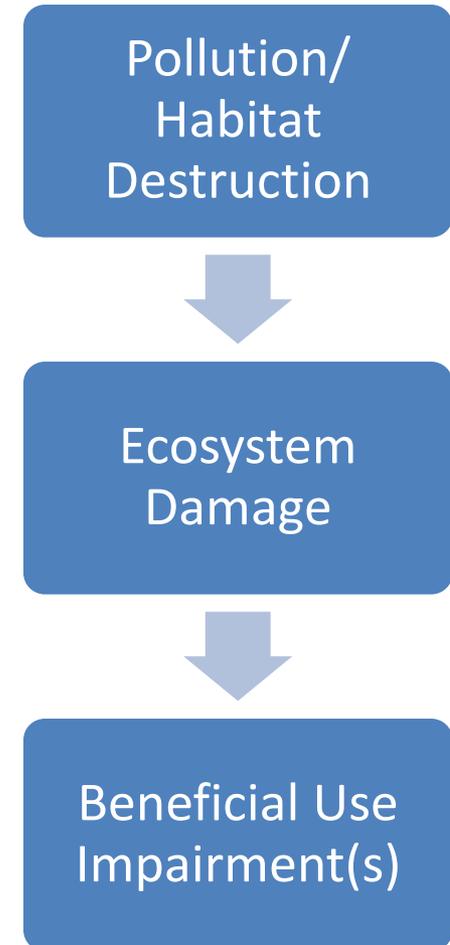


Source: Interstate Technology Regulatory Council



Beneficial Use Impairments (BUIs)

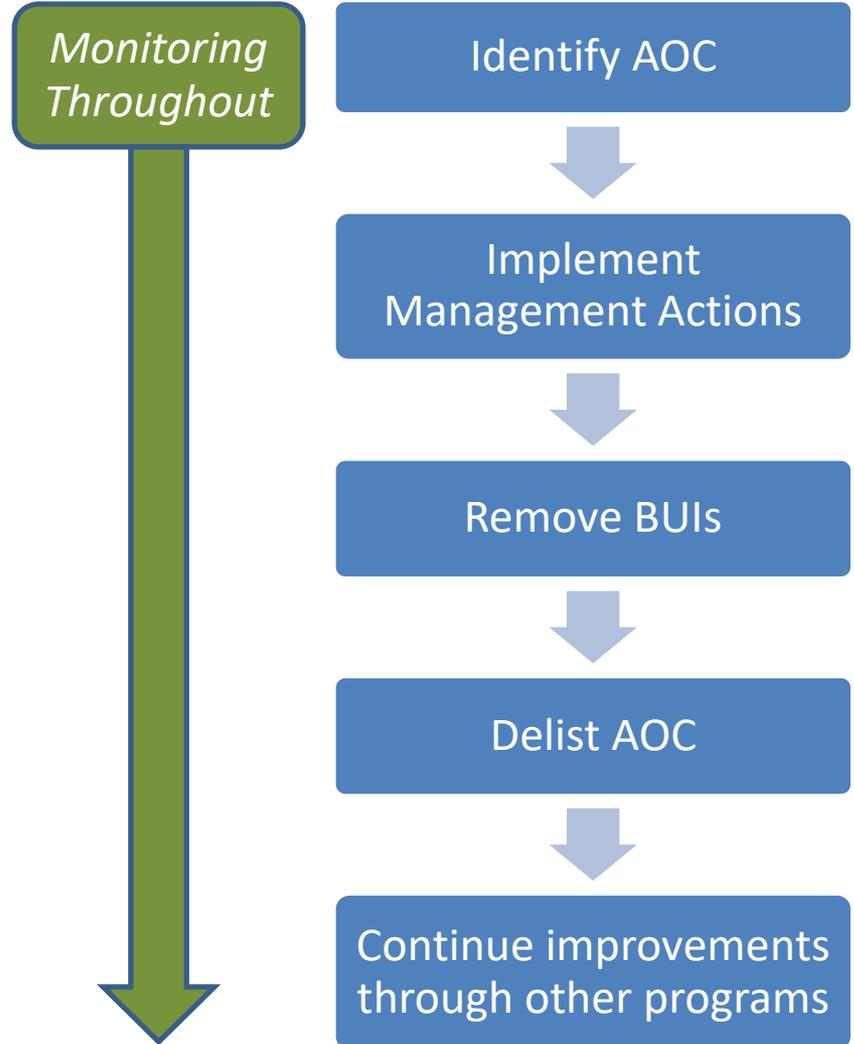
- Within AOCs, human-caused damage to the physical, chemical, or biological integrity of the watershed has occurred.
- This typically occurs due to legacy sediment contamination.
- This damage shows up as one or more “Beneficial Use Impairments” (BUIs).
 - Generally restrictions on business, municipal, or recreational activities that may be conducted.
- The presence of BUIs shows that basic ecosystem services are compromised.





How Are AOCs Restored?

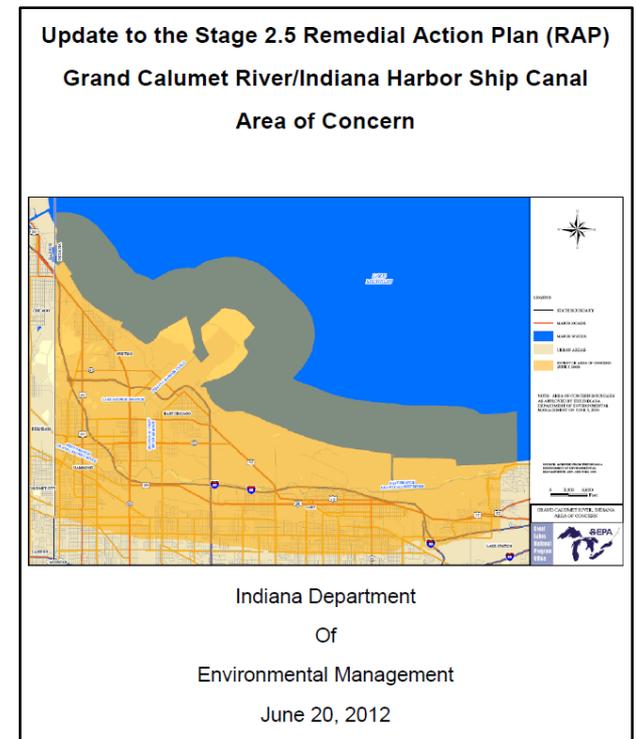
- Cooperative process involving federal, state, and local entities in the United States and Canada.
- Once an AOC is listed, a process starts to understand and restore damaged or impaired ecosystem services:
 - Identify which BUIs apply.
 - Develop a Remedial Action Plan (RAP), a blueprint for removing the applicable BUIs.
 - Conduct those actions or projects expected to remove the BUIs.
 - Monitor the ecosystem to gauge progress toward BUI removal.
 - Demonstrate that the BUIs no longer exist.
- Once all BUIs are removed, the area can be delisted (removed from the list of AOCs).
- Monitoring the ecosystem happens throughout the process.



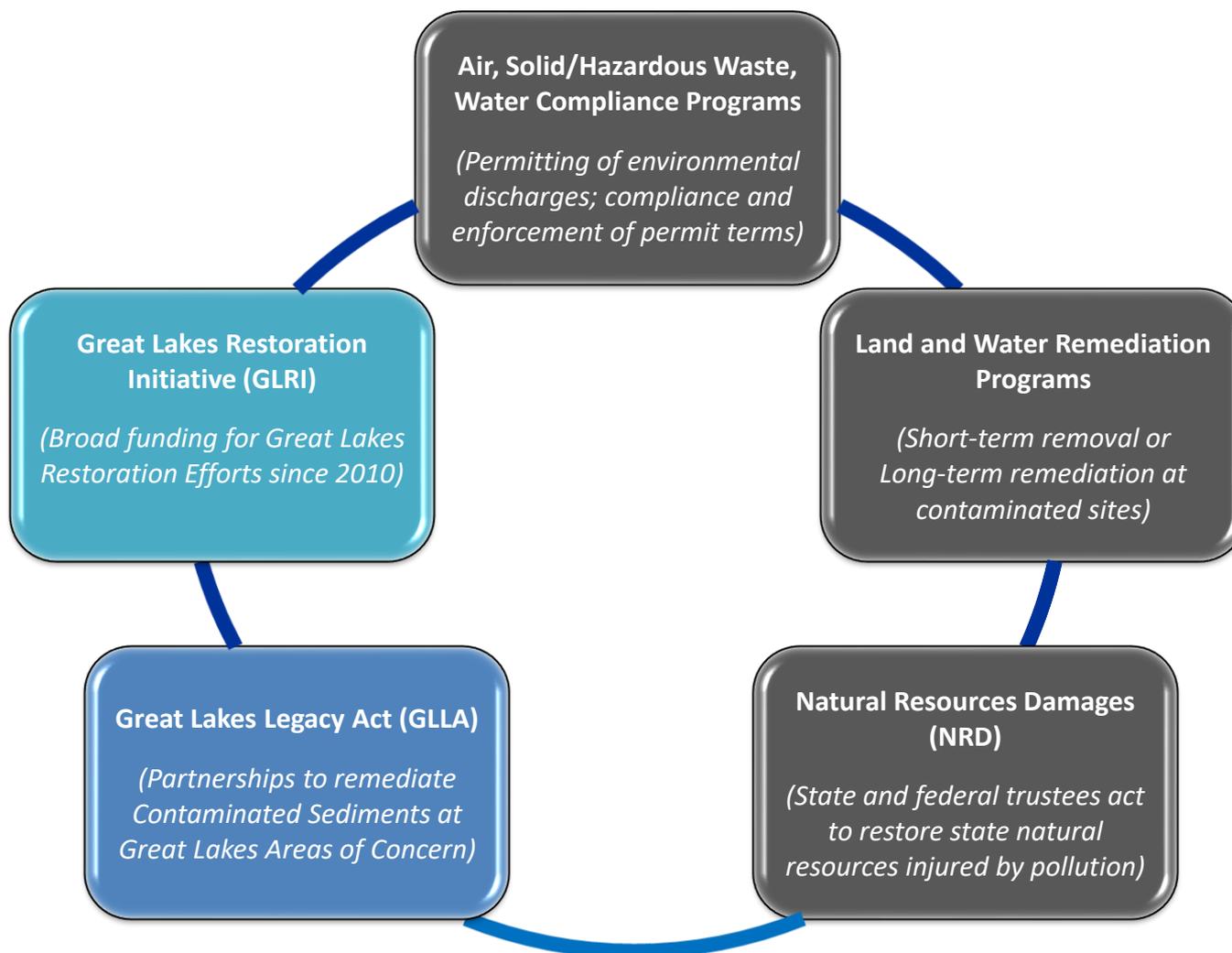


Remedial Action Plan (RAP)

- Document required of all AOCs to guide the restoration and eventual delisting.
- Produced in multiple stages to describe:
 - 1) The environmental problems which required listing the AOC.
 - 2) The plan for addressing the environmental problems.
 - 3) The evidence that the environmental problems have been addressed and the AOC may be delisted.



Environmental Programs Work Together In and Out of AOCs





Indiana Department of Environmental Management

Protecting Hoosiers and Our Environment Since 1986

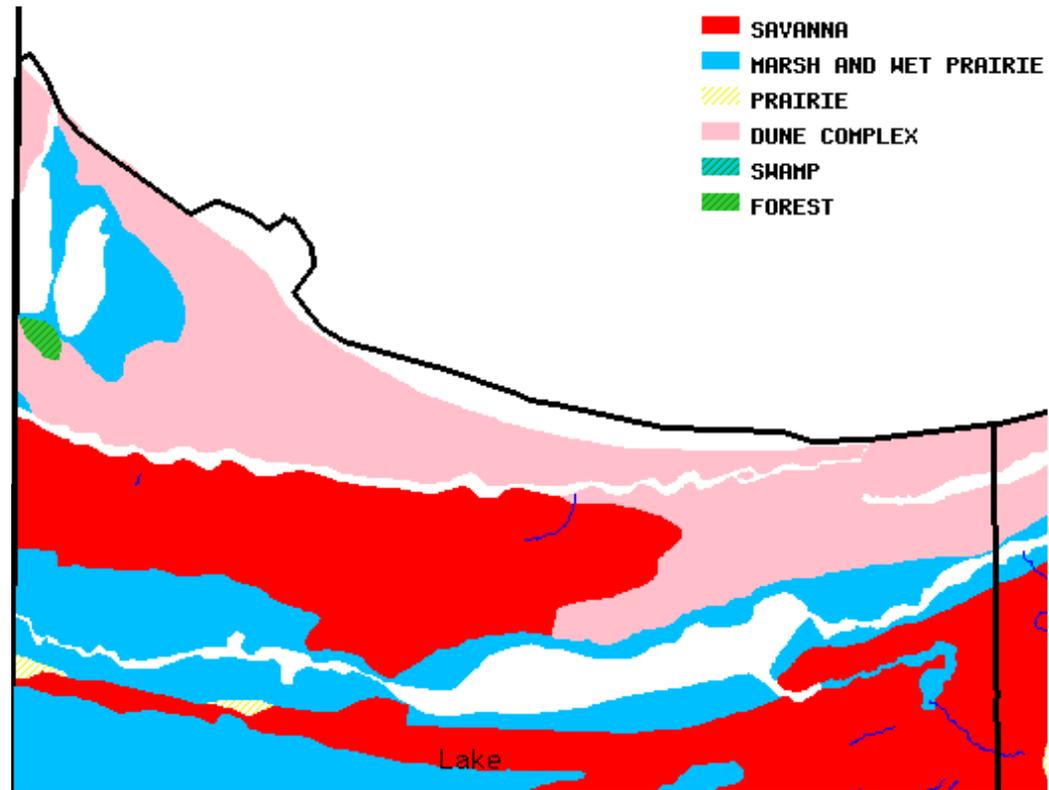


Grand Calumet River / Indiana Harbor Ship Canal Area Of Concern



The Pre-industrial Calumet Region

- Northern Lake County in the 1830s was mostly made up of the following land types:
 - Dunes
 - Savannas
 - Swamps
 - Marshes
 - Prairies
- The ecosystems of northern Lake County were developed as Lake Michigan retreated over thousands of years.

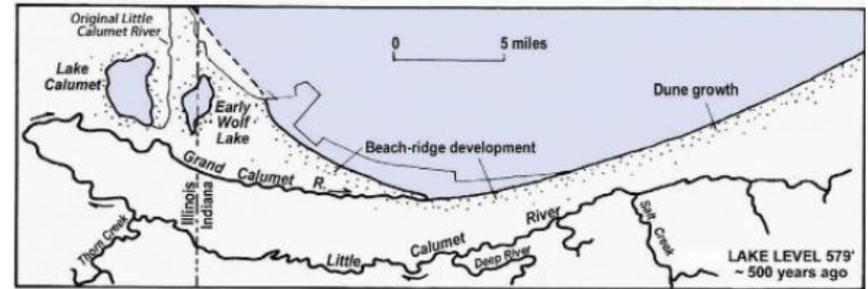


Source: Morton Arboretum



The Canal Age Shaped the Rivers

- The original Calumet River system followed depressions (swales) left over from ancient Lake Michigan shorelines.
- Canals for shipping and wastewater management (and other construction projects) during the 19th and early 20th centuries extensively modified the Grand Calumet River.



Source: Shoon (2016)



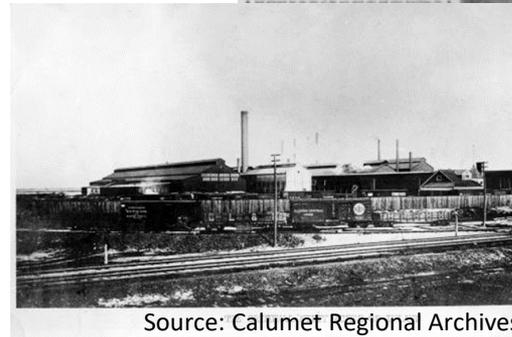
Source: Chicago Line Cruises

Industry Brought Jobs and Wealth

- In the 20th century, heavy industry flocked to Lake County, Indiana:
 - Meat packing
 - Steel
 - Petrochemicals
 - Sand mining
 - Cement
- Industry brought jobs, urbanization, and wealth to Northwest Indiana
 - US Steel's Gary Works Facility alone employed over 30,000 people at its peak in 1970



Dec. 12, 1906, Hammond Times, P. 9:
Source: Indiana State Library



Source: Calumet Regional Archives



Source: Library of Congress

And Reshaped the Landscape



Source: Hagley Digital Archives



Line of South Branch before Excavation. (Photo taken June, 1899.)

Source: Calumet Regional Archives



Source: U.S. Steel Corporation



South Branch viewed from Junction with Main Canal and West Branch. (Same view as above, taken May, 1910.)
This photograph shows Collector of Customs Sternberg in his launch.

Source: Calumet Regional Archives

1938



Source: Indiana State Archives

Today



Source: Google Earth Imagery



Results of Human Activity

Native ecosystems supported at least 18 natural communities;
Calumet river system flows in hairpin turn, exiting near Marquette Park;
Dune and swale ecosystem covers over 70 square miles in NW Indiana/NE Illinois

Harbors, canals, river
channelization

River flow reversal;
Loss of riverine wetlands;
Disconnection between
river and other
ecosystems

Urbanization,
Habitat Destruction,
Invasive Species

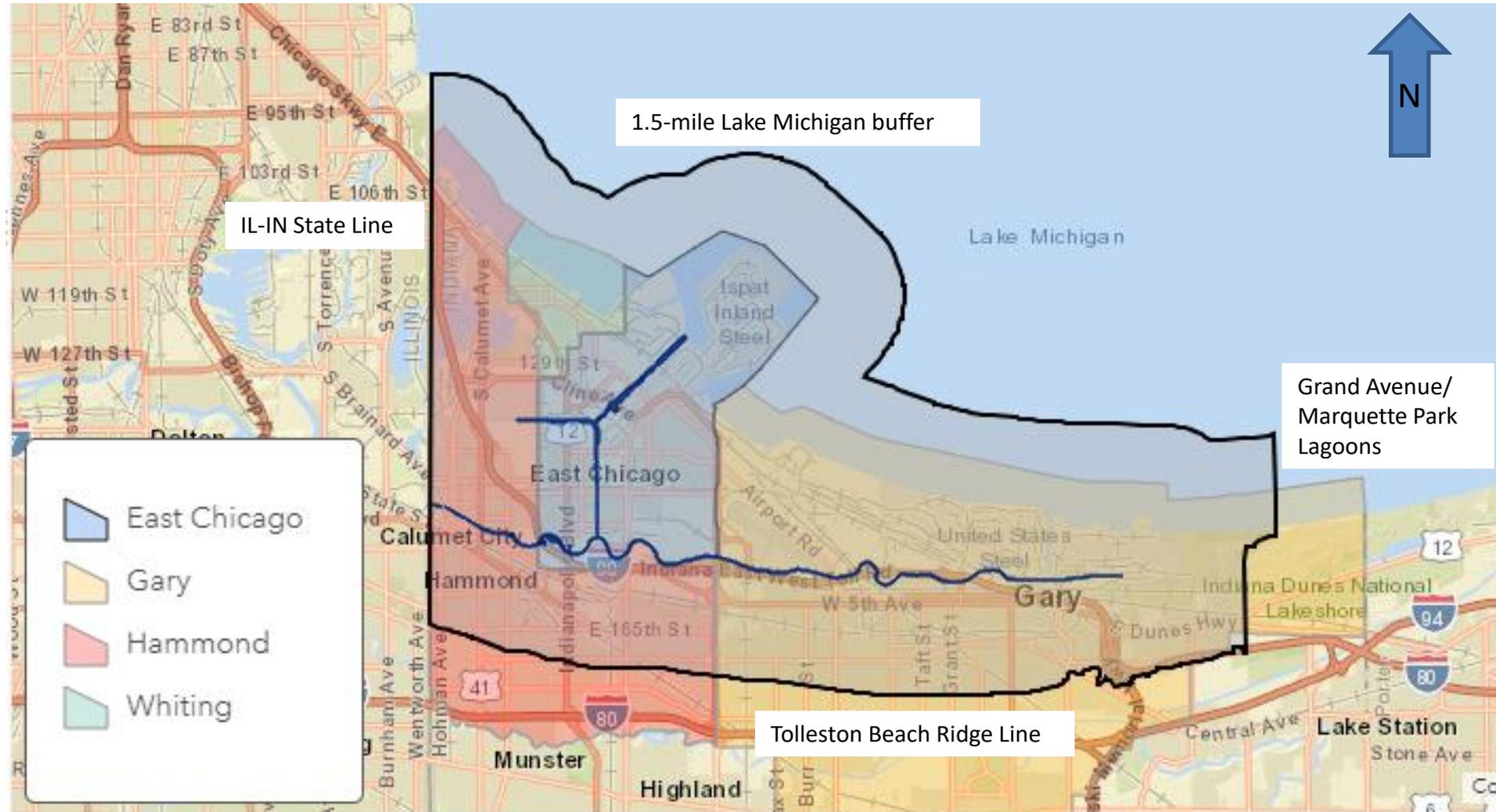
Loss of habitat
functionality &
native species;
Decreased storm water
management

Legacy air, land, and
wastewater pollution

Contaminated water,
soil, & sediment; Loss of
native species; 90% of
the flow comes from
wastewater/ storm
water; fish and wildlife
consumption advisories



Grand Calumet River AOC Map





CARE Committee

- Former IDEM Commissioner Kathy Prosser formed the Citizens Advisory for the Remediation of the Environment (CARE) in 1990 to advise IDEM on the Remedial Action Plan for delisting the AOC.
- Consists of various stakeholders:
 - Citizens
 - Municipalities
 - Environmental Organizations
 - Industry
- Affiliated federal, state, and local agencies also participate.



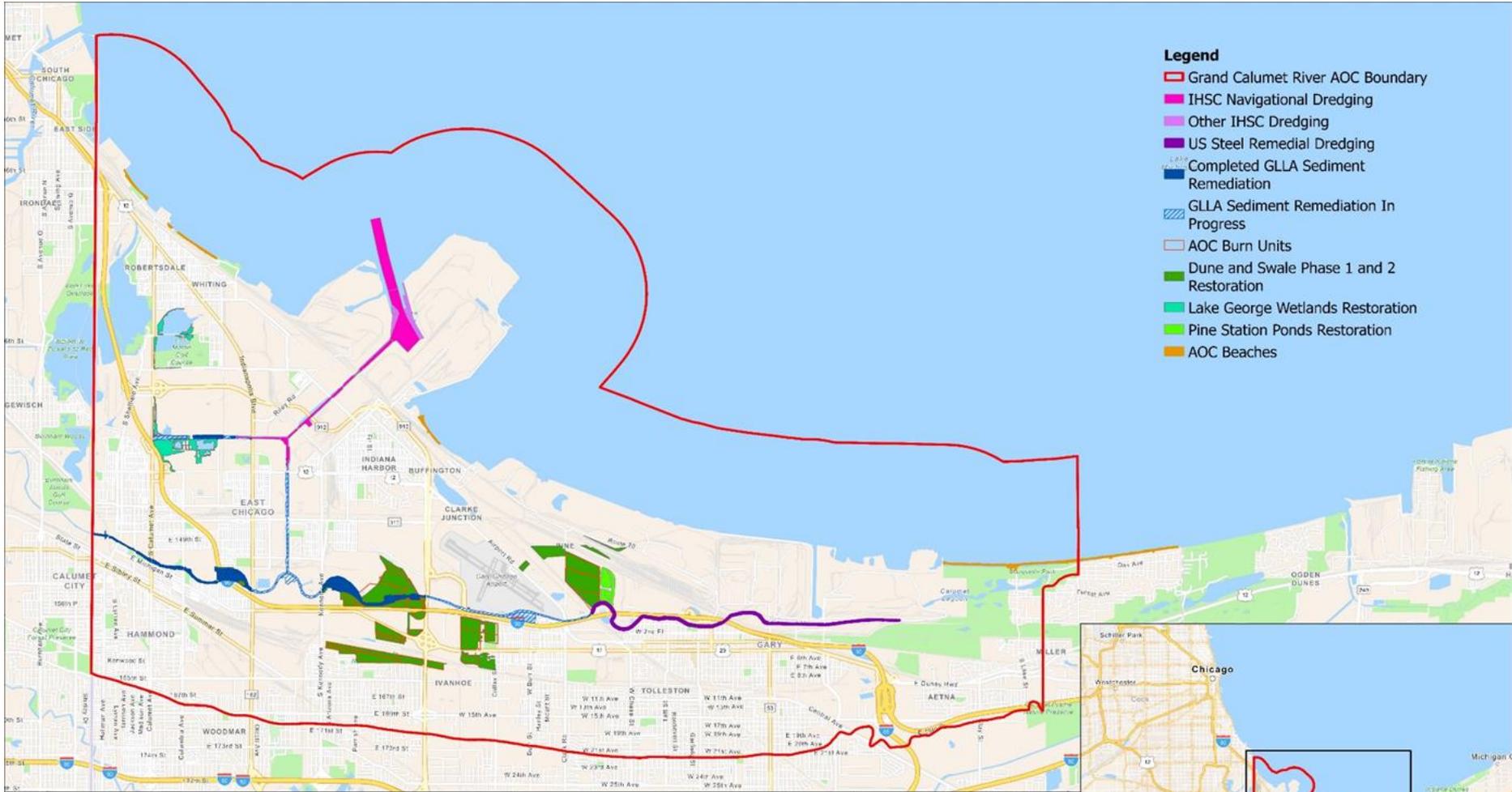


Indiana Department of Environmental Management

Protecting Hoosiers and Our Environment Since 1986

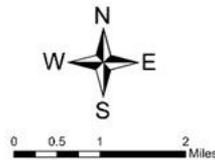


What Is Being Done to Remove the Beneficial Use Impairments?



- Legend**
- █ Grand Calumet River AOC Boundary
 - █ IHSC Navigational Dredging
 - █ Other IHSC Dredging
 - █ US Steel Remedial Dredging
 - █ Completed GLLA Sediment Remediation
 - █ GLLA Sediment Remediation In Progress
 - AOC Burn Units
 - █ Dune and Swale Phase 1 and 2 Restoration
 - █ Lake George Wetlands Restoration
 - █ Pine Station Ponds Restoration
 - █ AOC Beaches

Grand Calumet River Area of Concern (AOC) Lake County, Indiana



Map Projections: Indiana State Plane West (1302)
Data Sources: ESRI, USFWS, USACE, USEPA, IDEM, IDNR

This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.

Mapped by: Michael Spinar, IDEM, May 15, 2023





Completed Sediment Project Work

Stateline Project

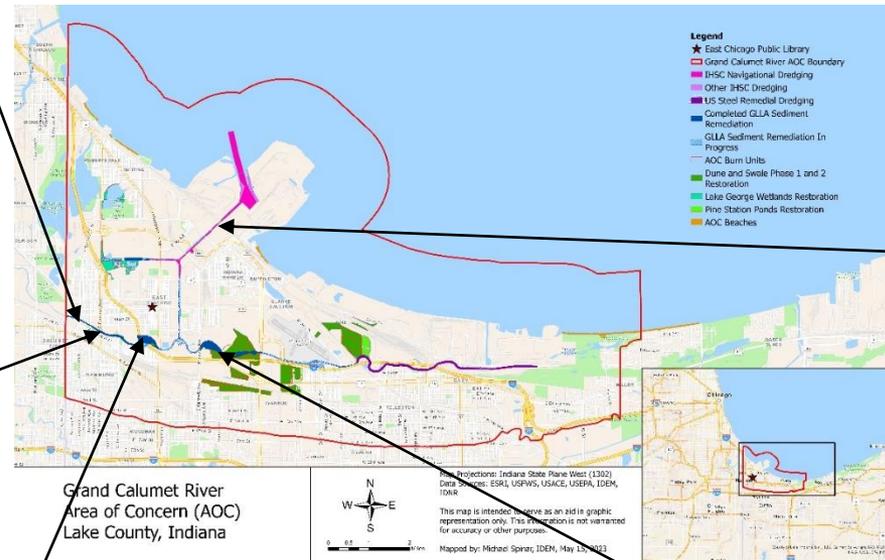
- Completed in 2016
- 46,135 cubic yards remediated
- Illegally-dismantled former Monon Bridge removed
- Project Cost: \$20 million

West Branch Project

- Completed in 2011
- 148,000 cubic yards remediated
- Project Cost: \$34 million

Roxana Marsh Project

- Completed in 2012
- 585,000 cubic yards remediated
- Mechanical excavation, sand cap, and reseeded of Roxana Marsh
- Project Cost: \$48 million



Grand Calumet River Area of Concern (AOC) Lake County, Indiana

Indiana Harbor Dredging

- Goal: Clear the sediment dredging backlog in the IHSC and Harbor, removing and safely confining contaminated sediment
- Dredging occurred from 2012-2020, at which time the channel reached authorized depths

East Branch Project

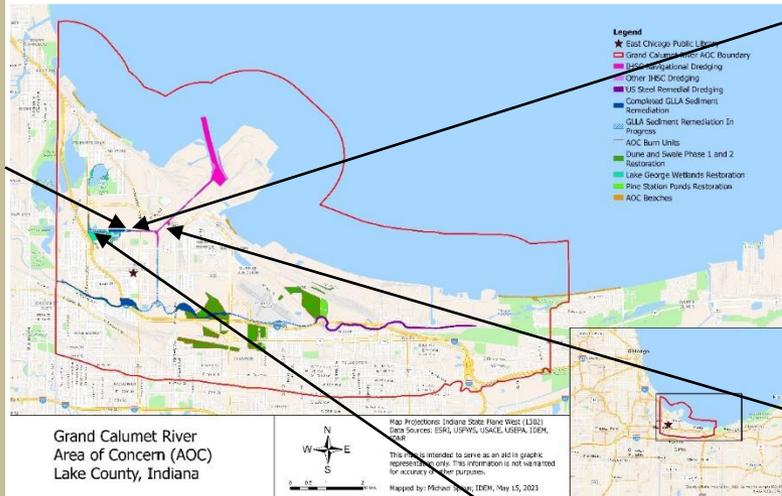
- Completed in 2015
- 1,067,152 cubic yards remediated
- Included 58-acre marsh restoration
- Also included removal of abandoned railroad bridges and gas pipeline
- Project Cost: \$88 million



Project Status: Lake George Canal/IHSC

Lake George Canal Middle

- Ribbon cutting event held July 10, 2023
- Project considered substantially complete as of August 2023
- Elements Completed: In-channel cap placement, ECI West Tank Farm bank stabilization/active mat placement, tide gate repair, pipeline decommissioning, in-stream aquatic habitat
- Contractor finishing up ecosystem restoration along the northern bank and the wetland shelf along the southern bank
- Nonfederal Sponsors: Atlantic Richfield Co., BP, East Chicago Waterway Management District



Lake George Canal East

- USACE’s contractor is collecting and analyzing data to inform project design
- Design completion expected fall 2024, with construction in 2025
- ARCO/BP is completing a sheet pile wall & groundwater/stormwater control system at the ECI South Tank Farm
- Nonfederal Sponsors: Atlantic Richfield Co., BP, East Chicago Waterway Management District

Orphan Areas GLLA Site Characterization

- USACE’s contractor is collecting and analyzing data to determine whether sediment control work is needed in portions of the Indiana Harbor Ship Canal

Lake George Canal West

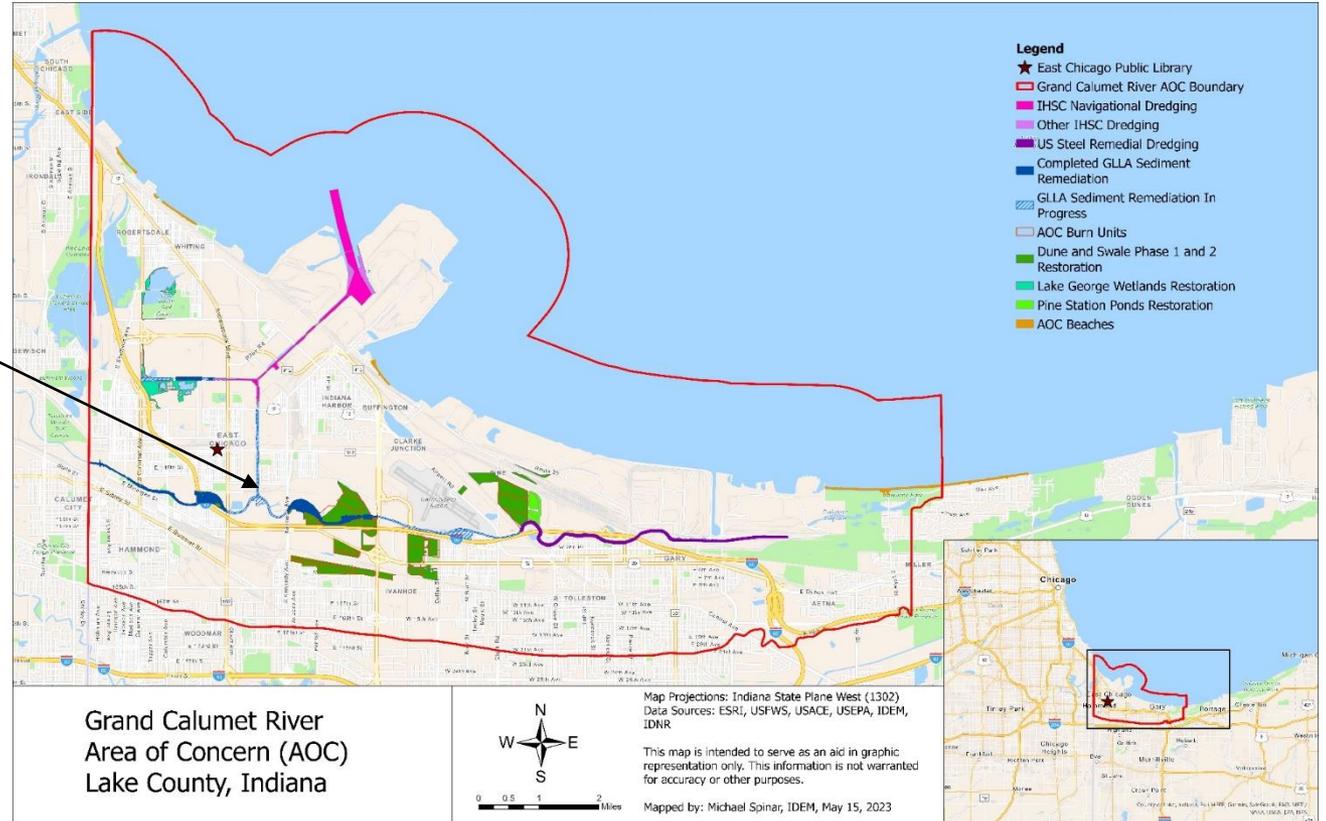
- Project undergoing supplementary remedial investigation and feasibility study
- Nonfederal Sponsor: BP



Project Status: Grand Calumet River Junction

GCR Junction

- Currently envisioned as a two-phase project:
 - Phase 1: WBGCR dredging and capping + IHSC “hotspot” dredging + wetland restoration option
 - Phase 2: IHSC capping + EBGCR capping
- Project in design
- Subsurface data collection planned for spring 2024
- EP is targeting award of construction contract in late 2024
- Nonfederal Sponsor: East Chicago Waterway Management District

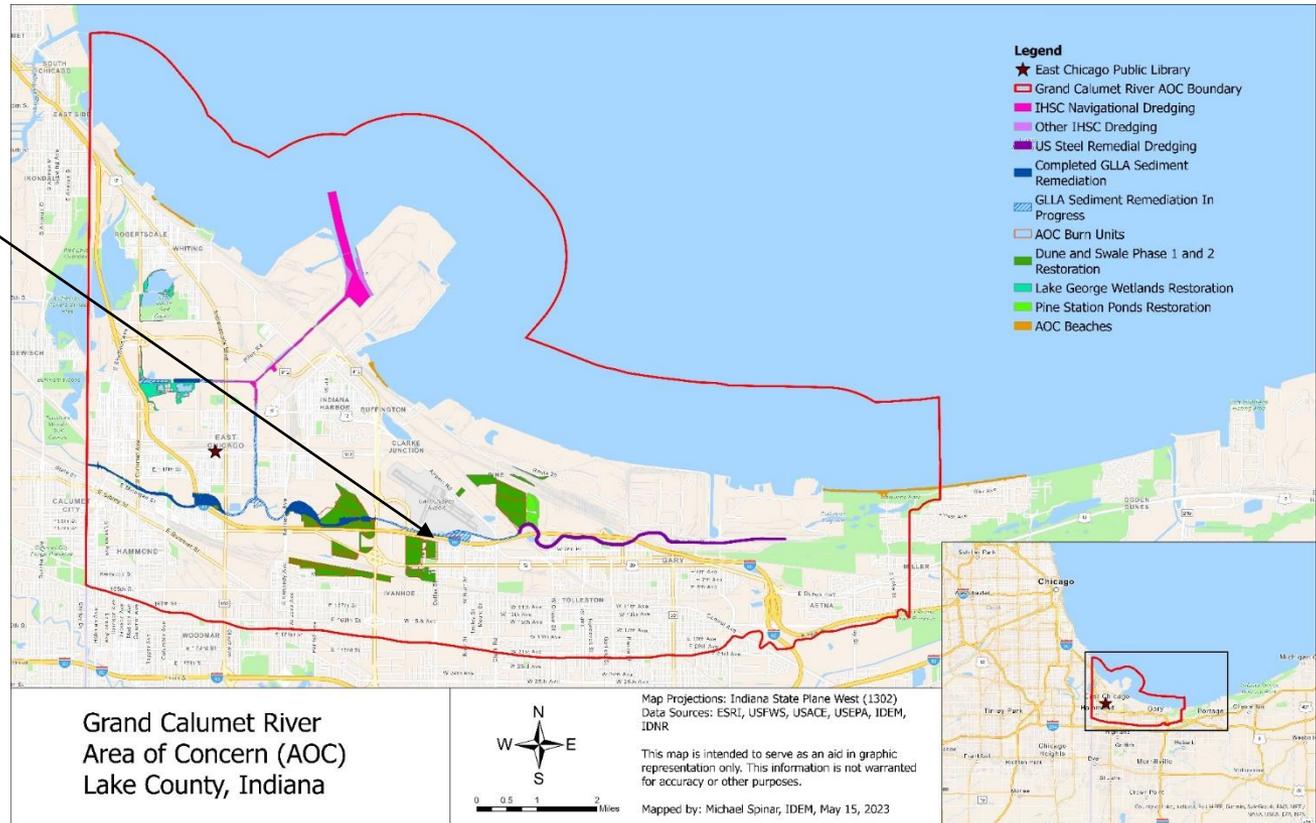




Project Status: East Branch Phase 2

EBP2

- Includes dredging and capping of the EBGCR, wetland restoration, and closure of Ralston Street Lagoon
- EPA in the process of selecting a design contractor
- Project construction due to begin in 2027
- Nonfederal Sponsor: Gary Sanitary District

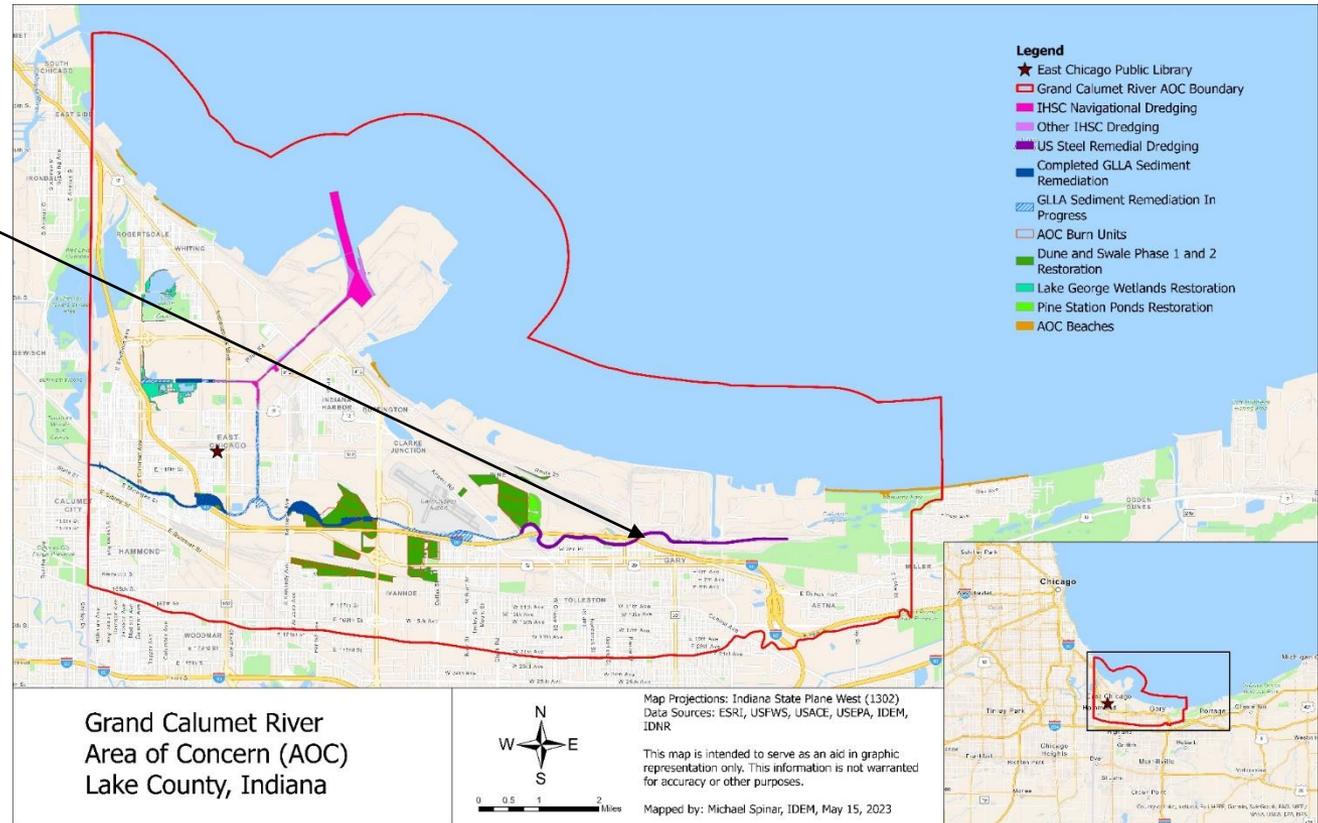




GCR East 5 Miles

E5M

- U.S. Steel dredged 830,000 cubic yards between 2002 and 2007 as part of an enforcement action
- EPA planning follow-up data collection effort to determine the nature and extent of any remaining contamination to ensure BUI restoration in this stretch





Habitat Restoration Project Work

Lake George Wetlands

- GLRI-funded Management Action concluded in December 2020.
- Goal: Restore 80 acres of wetland habitat

AOC Prescribed Burns

- GLRI-funded Management Action (project) concluded in December 2022
- U.S. Fish & Wildlife Service pass-through grant to local land managers
- Burn plans for 24 units, covering 725 acres
- Goal: Restore beneficial effects of fire to ecosystem

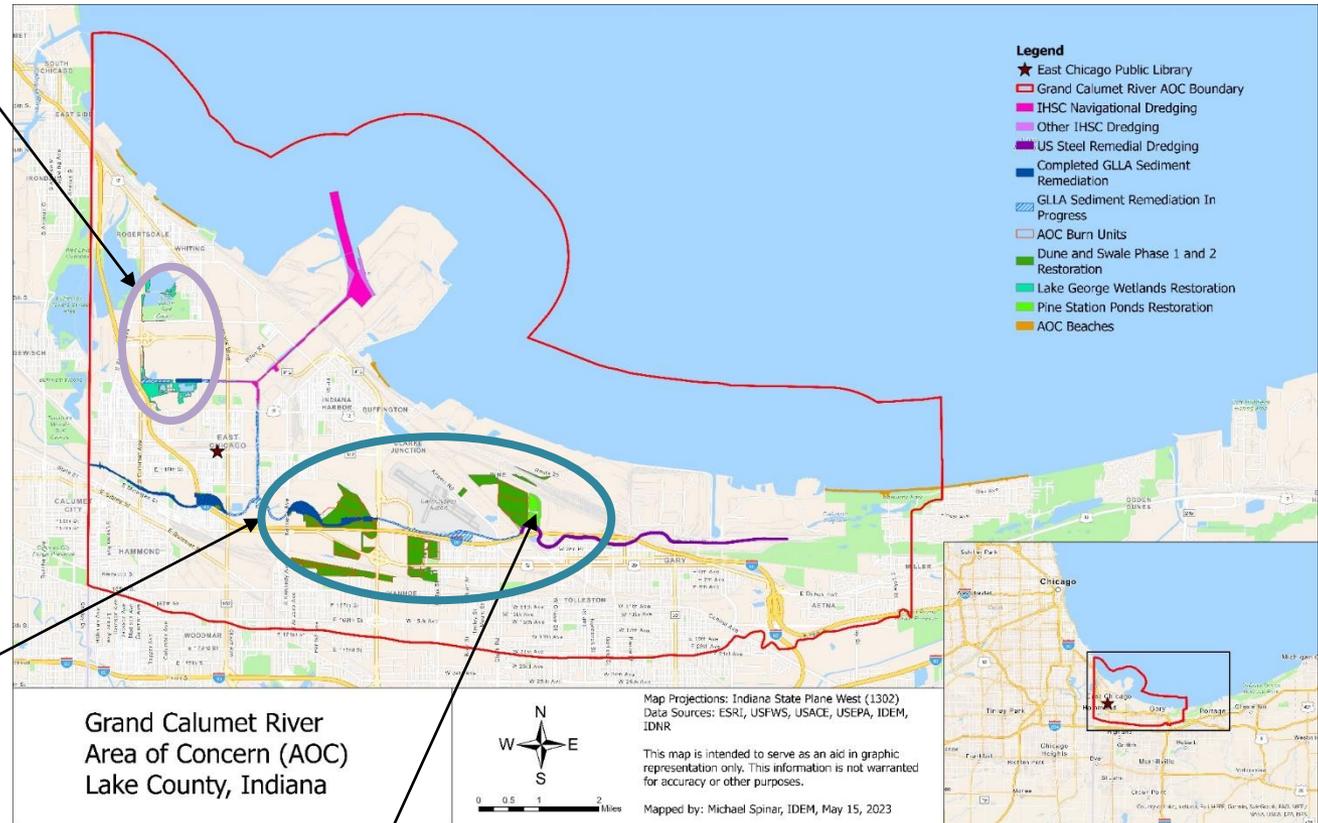
Dune and Swale (Phase 2)

- IDNR-led project, in conjunction with TNC and Lake Co. Parks.
- Goal: Complete restoration of 900 acres of native dune and swale & riverine habitats
- Expected completion in 2024

Grand Calumet River Area of Concern (AOC)
Lake County, Indiana

Pine Station Ponds

- IN DNR-led project.
- Goal: Restore injured habitat adjacent to high-quality dune & swale
- Initial invasives treatment/clearing conducted last year.





Why is Habitat Being Restored?

- Very little riverine wetland habitat remains to restore in the Grand Calumet River.
- Dune and swale is a globally rare habitat type that evolved together with the river.
- Experts from the United States and Canada, when reviewing Indiana's draft RAP, requested this habitat restoration component be included.



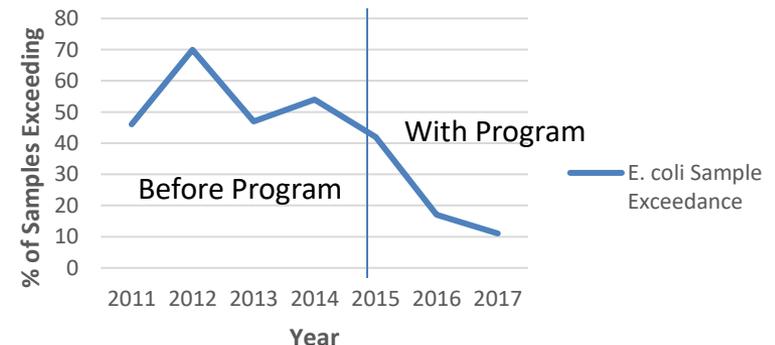
Nearshore Bird Management Program

- Studies indicate gull droppings contribute to beach advisories and closures at several AOC beaches.
- IDEM provided funding to Wild Goose Chase, Inc. through 2019 to patrol and deter nuisance shorebirds at selected AOC beaches (without harming the birds).



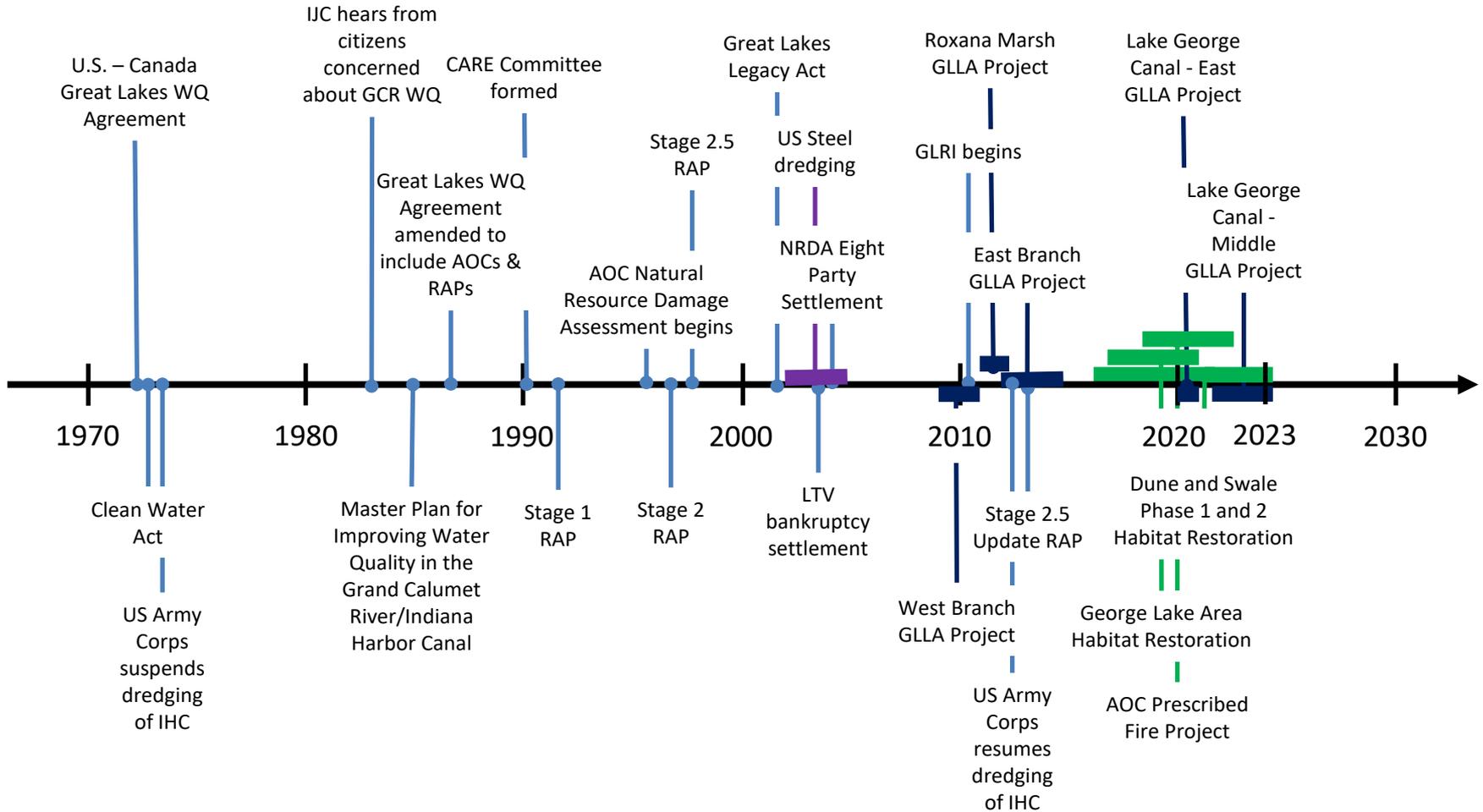
Source: IDEM

Percentage of Water Samples Exceeding State Standards at Jeorse Park Beach





Selected Events in the Grand Calumet AOC Timeline







Indiana Department of Environmental Management

Protecting Hoosiers and Our Environment Since 1986



What Work Remains to Remove the Beneficial Use Impairments?



Remaining Sediment Work

- Address contaminated sediment in areas outside the federal navigation channel:
 - Portions of the Lake George Branch
 - Indiana Harbor Canal, south of Columbus Drive
 - Grand Calumet River, between Indianapolis Boulevard and Kennedy Avenue
 - “East Branch Phase 2” (Grand Calumet River, Cline Avenue to second railroad bridge east of Buchanan Street)



Other Remaining Work

- Complete habitat management actions
- Develop management actions for remaining BUIs
- Complete all management actions*
- Monitor for BUI removal and eventual delisting

* In February 2022, President Biden committed \$1 billion to complete management actions at 22 of 25 remaining U.S. AOCs (including the Grand Calumet). EPA's goal is to complete these projects by 2030.



Getting Involved

- Plant natives, not invasives.
- Refrain from littering.
- Don't feed birds at the beach.
- Visit and learn about nature preserves within the AOC.
- Learn more about the AOC

Program:

- IDEM Website
- Public Events/Learning Sessions



Source: IDEM



Questions?

Michael Spinar

Remedial Action Plan Program Coordinator
Indiana Department of Environmental Management
Office of Program Support

IDEM Northwest Regional Office
330 W. US HWY 30, Suite F
Valparaiso, IN 46385
219-464-0233

Email: mspinar@idem.IN.gov

Website: idem.IN.gov/lakemichigan/rap